

## ABSTRACT

Photoacoustic measurement system are configured with a special view towards efficient coupling of optical and acoustic energy between respective transducers and a tissue test site. In particular, a disposable substrate provides support for advanced optical paths including, for example, windows, lenses, and index matching gels or fluids. In addition, substrates may also accommodate arrays of coupling sites corresponding to a plurality of acoustic detectors spatially separated. These substrates may additionally include means to affix and secure the device to a measurement head having optoelectronic and electromechanical transducers therein. Further, these substrates include mechanisms which help to affix the substrates to test sites in stable and secure fashion.